REMARKS/ARGUMENTS

Claims 1, 3-5, 11, 13, 15-17 and 24 are active. Claims 7-10 have been withdrawn from consideration.

Claims 1 and 15 have been amended to describe conditions producing the β single phase titanium alloy of the invention, which distinguish it from other alloys having the same components, which are not β single phase at room temperature (see the accompanying Declaration). The phrase "α+β/β transformation temperature of the raw titanium alloy material" which appears in claims 1, 7 and 15 is disclosed at [0028]. The "α+β/β transformation temperature" is an equilibrium state. At an equilibrium temperature above the transformation temperature, the alloy is a single β phase; below the transformation temperature the alloy is in two phases—the α phase and the β phase. Support for this amendment is found in the specification at [0026-0029]. These claims have been revised to exclude Ni, Co and Al and now require oxygen as an interstitial element. Claim 24 has been amended to adopt the convention "K". In view of the nature of the amendments no new matter has been added. Accordingly, the Applicants do not believe that any new matter has been introduced.

Restriction/Election

The Applicants previously elected Group I (products) with traverse. Group II, claims 7-10 (process) have been withdrawn from consideration. The requirement was previously made FINAL. The Applicants respectfully request that the claims of the nonelected group which depend from or otherwise include all the limitations of an allowed elected claim, be rejoined upon an indication of allowability for the elected claim, see MPEP 821.04.

Rejections—35 U.S.C. §103

Claims 1-5, 11, 13, 15-17 and 19-24 were rejected under 35 U.S.C. 103(a) as being unpatentable over Bitter et al., GB 2,190,100. Bitter does not disclose or suggest titanium alloys that have been produced by the solution treatment required by claims 1 and 15, nor provide a reasonable expectation of success that these steps would produce a β single phase titanium alloy stable at room temperature. Otherwise identical titanium alloys which undergo different treatments (i.e., solution treatment or no solution treatment) have different structures as shown by the accompanying Declaration.

As shown in the top figure of the Declaration (control, no solution treatment), an otherwise identical titanium alloy that is not solution treated as required by the invention contains alpha phase as indicated by the arrow. On the other hand, the solution treated titanium alloy of the invention (bottom figure) does not contain alpha phase. These differences distinguish the invention from Bitter which does not disclose or suggest the solution treatment required by the invention which results in production of a β single phase alloy instead of a mixed α and β phase alloy (as shown by the accompanying Declaration).

Moreover, as discussed in a prior response, Bitter does not provide motivation for making a titanium alloy containing a Mo_{eq} ranging from 3-11% and an interstitial element (oxygen) content of 0.6-3.0%. Bitter is concerned with plasma glow-discharge surface treatment of titanium alloys with interstitial elements and not with solution treatment, see page 2, lines 8-11. A "solution treatment" refers to a process of heating an alloy so that all the constituents are taken into the solid solution (i.e., into a single phase)[0048-0049]. This is quite unlike an alloy that is surface treated in glow-discharge plasma (Bitter, claim 1, page 1, lines 5-10).

Since Bitter does not disclose the combination of specific ranges required by the invention, nor disclose all the elements of the invention (i.e., the solution treatment which

produces a materially different product), it does not render the invention obvious. Accordingly, the Applicants respectfully request that this rejection be withdrawn.

Rejection—35 U.S.C. §103

Claims 1-5, 11, and 13-24 were rejected under 35 U.S.C. 103(a) as being unpatentable over Saito et al., U.S. Patent No. 6,607,693. Saito does not disclose or suggest titanium alloys that have been produced by the solution treatment required by claims 1 and 15, nor provide a reasonable expectation of success that these steps would produce a β single phase titanium alloy stable at room temperature.

Alloys having the same elemental components, but which undergo different treatments, have different physical structures as shown by the accompanying Declaration. For this reasons, the Applicants traverse the Examiner's statement in the Official Action that process limitations would not distinguish the titanium alloy of the invention from the titanium alloys of Saito.

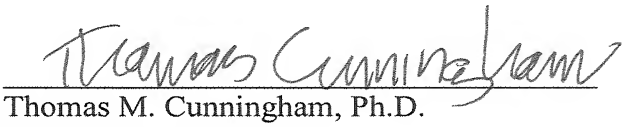
Moreover, as discussed in a prior response, Saito does not provide specific motivation for making a titanium alloy containing a Mo_{eq} ranging from 3-11% and an interstitial element content of 0.6-3.0%. For example, col. 11, lines 6-7, teach away from an oxygen content above 0.6%. However, the inventors have surprisingly discovered that higher amounts of interstitial elements like oxygen can be incorporated and produce β single phase alloys at room temperature after solution treatment [0017, 0046]. Therefore, since Saito does not disclose selecting the specific component ranges required by the invention, provide any rationale for incorporating relatively large amounts of interstitial elements like oxygen into a titanium alloy by solution treatment, nor disclose all the elements of the invention (i.e., the solution treatment which produces a materially different product), it does not render the invention obvious and this rejection should be withdrawn.

Conclusion

In view of the above amendments and remarks, the Applicants respectfully submit that this application is now in condition for allowance. An early indication of such is earnestly requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
Norman F. Oblon



Thomas M. Cunningham, Ph.D.
Registration No. 45,394

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 03/06)